A study on Private Veterinary Pharmacies and Clinics in Sudan

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Dedication

To my

Parents for their support

and inspiration in previous studies

As well as for this work.

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Survey of Private Veterinary Pharmacies and Clinics in Northern Sudan

MTAH

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ABSTRACT

The aim of the present study was to examine the functioning private veterinary pharmacies and clinics in North Sudan states in terms of: inventory control performed in pharmacies, volume of annual drugs sold, the most consumed drugs and the best selling season.

Two questionnaires were developed to fulfill this purpose, one for veterinary pharmacies and the other for veterinary clinics. Functioning veterinary pharmacies surveyed were 171 and 40 veterinary clinics. The results revealed that 108 (63.2%) of the veterinarians working in pharmacies are males and 63(36.8%) are females. All the respondents hold B.V.Sc and B.V.M from The University of Khartoum 92 (52.8%), 42 (24.6%) from Nyala University, 23 (13.5%) from University of Sudan, 5 (2.9%) from Bahar ELGazal University and 9 (5.2%) from foreign universities. Among the respondents 14% have acquired pharmacy management skills during their work as sales promoters or agents in pharmaceutical companies.

The majority of pharmacies 141 (82.6%) were owned by veterinarians, 84 (49.1%) of the pharmacies were linked with medications and inventory goods warehouse storage. The average age of pharmacies was 16 years.

The study showed that medications sold with prescription accounted for 16% of the total sales. The mean value of daily sales was 384 (SDG) and that all pharmacies income came from medications sales.

The majority of respondents stated that 114 (66.7%) their pharmacy sales were appropriate to the pharmacy location. There were 130 (76%) of respondents who reported that items available in the pharmacy were enough to cover all customers needs. The majority of respondents 147 (86%) got their pharmaceuticals through a group purchasing arrangements. The study showed that 47 (27.5%) of the respondents stored quantities of medications that cover one month, whereas, 87 (50.9%) of the respondents stored medications that cover 3 to 4 months. 86 (50.3%) of the respondents have had opened budget to buy their medications, whereas, 85 (49.7%) of the respondents had a limited budget and used it as needed.

Regarding the veterinary clinics the results revealed that out of the 40 veterinarians involved in this business 22 are males and 18 are females .21 (60%) of them graduated in University of Khartoum, 7(17.5%) in Sudan University, 5(12.5%) in Bahar Elgazal University, 2(5%) in Nyala University and 2(5%) from foreign universities. The professional experience of the respondents varied between one year and more than 15 years. All clinics were located near farms.

The study revealed that 67.5% of the respondents work more than 8 hours a day, 15 (37.5%) of the clinics have warehouses for medication storage. The average daily income of the clinics including provision of services and the price of medicines was 207 with a range of 30-1000 SDG.The study indicated that autumn and winter were the best seasons for the provision of veterinary services and hence drugs sale. The best selling drugs were antibiotics (70%) and anthelmintics (20%).

مسح عن الصيدليات و العيادات البيطرية الخاصة في ولايات السودان الشمالية

ماجستير

ابراهيم داود جمعة تجاني

المستخلص

هدفت هذه الدراسة الي معرفة عدد الصيدليات و العيادلت البيطرية التي تعمل فعليا في ولايات السودان الشمالية من حيث مراقبة المخزون وحجم الأدوية المباعة سنويا وأكثرها إستهلاكا وأفضل مواسم البيع. لذلك صمم إستبيانات لهذا الغرض إحدهما للصيدليات و الآخر للعيادات. استجابت 171صيدلية بيطرية خاصة و 40 عيادة بيطرية خاصة عاملة. يدير 165(96.3%) من هذه الصيدليات بياطرة حملة درجة البكالوريوس في العلوم البيطرية و الطب البيطري 92 (53.8%) تخرجوا في جامعة الخرطوم، 42 (24.6%) في جامعة نيالا، 23 (13.5%) في جامعة السودان، 9(5.2%) في جامعات أجنبية و5 (2.9%) في جامعة بحر الغزال. بيدا أن هناك 24 (14%) منهم اكتسبوا خبرات عن إدارة المخزون و المشتريات أثناء عملهم في شركات الأدوية مما يدل على عدم كفاية المدة للمعرفة الجيدة عن طرق مراقبة المخزون و المشتريات.مائة واحد واربعون (82.6%) صيدلية بيطرية مملوكة لبياطرة.اوضحت النتائج ان 84 (49.1%) من هذه الصيدليات ملحقة بمخزن للأدوية و البضائع. أظهرت الدراسة أن متوسط عمرا لصيدلية البيطرية 16 سنة أما نسبة الأدوية المباعة بواسطة الوصفة الدوائية كانت 16% من المبيعات الكلية وإضافة الي ذلك يبلغ متوسط المبيعات اليومية 384جنيه سوداني. اوضح الغالبية 114 (66.7%) من الصيدليات أن مبيعاتهم متناسبة مع موقعها وقد صرح 130 (76%) منهم بأن محتويات الصيدلية تسد جميع إحتياجات الزبائن وأن الصيدلية تعتمد في دخلها على مبيعات الأدوية. تبين أن معظم الصيدليات 147 (86%) تحصل على أدويتها عن طريق الشراء بالجملة وأن 47 (27.5%) منها تقوم بتخزين ما يكفي لمدة شهر و 87(50.9%) من 3 الي 4 شهور.وجد ان 86 (50.3%) من الصيدليات لديها ميزانية مفتوحة لشراء الأدوية أما 85 (49.7%) منها لديها ميزانية محدودة تستخدمها حسب الحوجة.

أما بخصوص العيادات البيطرية فإن من بين الاربعين عيادة وجد ان 22 منها يديرها اطباء بيطريين و 18 بواسطة طبيبات بيطريات تخرجوا على نحو الاتي 21 (60%) في جامعة الخرطوم، 7 (17.5%) في جامعة السودان، 5 (12.5%) في جامعة بحر الغزال، 2(5%)

في جامعة نيالا و 2 (5%) في جامعات أجنبية.و خبرة هولاء في العيادات متفاوتة مابين 1 – 15 سنة. كل العيادات موجودة بالقرب من المزارع. اوضحت الدراسة ان 27 (67.5) عيادة تعمل اكثر من 8 ساعات في اليوم أما البقية 13 (32.5%) تعمل أقل من 8 ساعات في اليوم. العيادات الملحقة بمخزن كانت 15 (37.5%). متوسط الدخل اليومي ويشمل تقديم الخدمة سعر الدواء 207 جنيه سوداني بمدى ما بين 30 – 1000 جنيه سوداني. و يعتبر الخريف و الشتاء أفضل مواسم البيع وأكثر الأدوية المباعة هي المضادات الحيوية (70%) ثم مضادات الديدان (20%).

CHAPTER. 1.
GENERAL INTRODUCTION

1.1 INTRODUCTION

Public services are coming under pressure all over the world for not performing adequately. Consequently, the concept of privatization is finding wide acceptance as an alternative. Veterinary services are no exception to this trend. Privatization means relying on society's private institutions rather than on government. Privatization is the act of reducing the role of government and increasing the role of private sector in activity or in the ownership of assets.

The privatization of veterinary services in Sudan began in early nineties. Private sector began acting mainly in pharmaceutical companies, pharmacies and clinics which played a big role in delivery of veterinary drugs and therapeutics to different parts of Sudan.

The drug trade in Sudan increased in the last two decades after the implementation of free market policy. This policy of liberalization of economy allowed pharmaceutical companies to compete in importing veterinary drugs and therapeutics, especially. Sudan does not manufacture veterinary drugs. This has led to considerable development in the field of drug marketing and distribution as exemplified by tremendous increase in pharmaceutical companies and private pharmacies and clinics

Consequently, the veterinary private sector in Sudan is expanding in the field of drugs distribution by pharmacies & clinics. There are no comprehensive studies that determined the role played by private veterinary pharmacies and clinics in livestock development in Sudan.

The actual number of functioning pharmacies and their distribution in different parts of Sudan, veterinarians knowledge of inventory control methods and their education regarding this issue, information about drugs volume marketed and distributed by them, types of drugs mostly consumed and the best selling seasons, methods followed to make drugs available for consumers and the role played by the veterinarians in these pharmacies and clinics in collaboration with other governmental and non-governmental institutes in disease surveys and control. All need indepth study exploration.

1.2 Objectives

Specific objectives of the study can be outlined under the following:

- Examine the inventory control practices in private pharmacies.
- Determine drugs volume marketed and distributed by them, in addition to knowing types of drugs mostly consumed and the best selling season(s).
- The role of private veterinary clinics in development of veterinary services.

CHAPTER.2.
LITERATURE REVIEW

2.1 Animal population sizes in Sudan:

The one of most important resources in Sudan is livestock; so far it is a hidden treasure that could contribute enormously to the solution of national economical problems. Although, it is not the only utilized resources, but it is the only means of livelihood for several millions of population in Sudan. The livestock sector constitutes a stable source of revenue for the government in the form of direct and indirect taxes, earn foreign currency from export of livestock, meat and hides. Its contribution in the national gross product exceeded 20%. Moreover; it provides employment to 25% of the population (Saad, et al 1999). The official figures for livestock (cattle, camel, sheep and goats) estimated in the last ten years 1997-2006 are shown in table No. 1.

Cattle owing tribes (Baggara) and the majority of sheep and camel herding tribes move in the savannah belt during the dry season and spent the rainy season in their dars (homeland) in the semi arid zones. The movement of these tribes is not haphazard but is restricted to areas generally used by their tribes and sub tribes known as migratory routes.

Table No. 1: estimates of animal population in million 1997-2006

Year	Cattle	Sheep	Goats	Camels	Total
1997	33.2	43.3	34.5	2.8	113.8
1998	34.5	44.2	35.7	2.9	117.3
1999	35.7	45.3	37.1	3	120.9
2000	37	46	38.5	3.1	124.6
2001	38.3	47	39.9	3.2	128.4
2002	39.4	48.1	41.4	3.3	132.2
2003	39.6	48.4	42	3.5	133.5
2004	39.9	48.9	42.1	3.7	134.6
2005	40.9	49.8	43	3.8	137.5
2006	42.1	50.8	43.9	3.9	140.7

Source Ministry of Animal Resources and Fisheries 2006

Equine and camel serve as packing and riding animals and play a very important role in transport in rural areas and the outskirts of urban centers. Their population is estimated as 5 mn for equines and 3.7 mn for camels in the year 2004.

With increase in urban population and the demand for different varieties of animal protein, recent years have witnessed big poultry farms construction. It is expected that three folds of the present bird population estimated as 40 mn could be produced.

2.2 Economical important diseases

There are a number of constraints to increase livestock production in Sudan. These constraints include the availability of natural resources as well as the large number of infectious diseases and parasites. The most important bacterial and viral diseases are black quarter, hemorrhagic septicemia, contagious bovine and caprine pleuropnuemonia, Rift Valley Fever, lumpy skin disease, mastitis, brucellosis, salmonellosis, foot rot, actinomyces pyogenes infection and anthrax. Great efforts have been made to fight and control these diseases by adoption and strict implementation of vaccination programs. However some out breaks have occurred when prices were set up for the vaccines. This decision made animal owners to vaccinate their animals when they are at real risk. Other important bacterial diseases include, pasteurelosis, tuberculosis, heart water (spirchaetosis), streptothricosis, staphylococcus and streptococcus infection, clostridial infection, enterobactericae, bovine farcy and mycoplasmal infections. These diseases are prevented among nomadic herds and are treated by antibiotics. Antibiotics are also used against secondary infection associated with viral diseases caused by opportunistic agents.

The prevalence of parasitic infection is very high. Endemic trypansomiasis and tick borne diseases e.g. babesiasis and theileriasis constitute real threat to animal production in this country. Helminthic diseases are highly prevalent among livestock in Sudan. A single animal in traditional nomadic herds usually harbors several species of parasitic infections and they are high during the rainy season when animal graze infested green pastures e.g heamonchosis and strongyliodosis.

On the other hand, animals are exposed to water borne parasitic disease transmitted by snails during their grazing in irrigated range land e.g. facioliasis and schistosomiasis.

Regarding the poultry sector, there are newly established private big poultry farms and others are under construction. It is anticipated that three folds of the present number of broilers and layers are produced in the very near future. Avian diseases whether newly emerging diseases like influenza, rapid spreading ones such as Newcastle or nutritional deficiencies pose real threat to poultry production. Urbanization is widely assumed to boost the demand to animal protein. People move to towns but their animals don't. In addition urbanization is usually associated with changes in consumption patterns and habits as evident by high increase in red and white meat, and milk products such as cheese, yoghurt and ice cream consumption in the capital city and other big cities in the country (Saad et al 1999).

2.3 Privatization:

The impact budget reduction and broad service delivery responsibilities left many state veterinary services with insufficient operating budget to fulfill their obligations and hence encouraged the view that they had become ineffective and inefficient (CTA 1987; de Haan and Nissen 1985). The publicity given to this view provoked calls for privatization of many of their

roles, so as to reduce the state's budget liabilities and simultaneously improve the efficiency of animal health services delivery (Leonard 1985; de Haan and Bekure 1991). Privatization does not mean that all animal health services should be taken over by the private sector (Umali et al 1992). The focus has also shifted away from defining the private sector as comprising solely market- dependent operators.

In recent years there have been claims that reform programms have failed, and that the reasons for these failures have been attributed to the refusal of donors to consult, and to agree in processes of change, with State Veterinary Services (Gros 1994; Odeymei 1994). It has been argued that the reforms did not consider the objectives and opinions of key stakeholders in state veterinary services, and had furthermore been motivated primarily by need to reduce budget deficits rather than improve the delivery of animal health services (Tber 1995).

As a consequence, reform did not receive strong support from State Veterinary Services. Overseas Development Administration (ODA) of the United Kingdom has undertaken a review of policy for delivery of animal health services in different economical, social and livestock production environments. The aims of the study were to:

- Evaluate existing examples of alternative ways of providing animal health services.
- Draw together these examples and design a theoretical work plan so as to identify a set of principles on which policy may be based.
- Present the results to policy makers in a user-friendly form.

Its purpose was to encourage the heads of State Veterinary Services to express their views, and to incorporate these into the process of defining the direction of a consultative process aimed at identifying appropriate

policy options acceptable to, and sponsored by, all interested groups. For the purpose of this study emphasis will be made on the results of ODA report on role of clients.

2.4 Clients:

There are clear differences in the clients' requirements, to state veterinary services in different regions. The fact that European Chief Veterinary Officers perceive their main clients to be the public while the food industry suggests that the emphasis of the state veterinary services must rely on sanitary measures and appropriate regulations, since the prime role of their veterinary services is to ensure the safety of the livestock products entering the human food chain (Umali 1992).

Moreover private clinical services are widespread and effective, so that the needs of producers are cared for in this way. This reveals a different order of priorities in Africa, oriented more towards livestock producers and less at the food industry. In addition this is also in contrast to the situation in regions such as Africa where the priority is stated to be on providing services to support the smallholder sector.

2.5 State Responsibility:

The results of many studies have shown that respondents were asked about which services they considered to be the responsibility of the state, and those which were less important for the state to provide. The ensures usually received are reflecting that the services disease outbreak control, disease prevention, disease surveillance, disease investigation/ diagnosis, public health, drug & vaccine control, promotion of international trade, promotion of domestic trade, extension & training, research, animal welfare, drug & vaccine production, and therapeutic service.

There was widespread agreement between countries on the high priority given to sanitary aspects of veterinary service, including disease control and drug regulation, and promotion of safe international trade, which in economic terms would be classified as public goods.

The middle priority group apparently consisted of services like extension/training, research, and promotion of domestic trade, which may have either public or private good characteristics and occupy a theoretical grey area. The services given lowest priority as responsibilities of the state were drug and vaccine production and the provision of therapeutic services, which were usually considered to be private goods.

Livestock ownership and production play an important economical and cultural role in the rural communities of Africa (Umali et al 1992). Not only are these animals a source of protein – rich food, transport, draught power, investment and money, but cattle in particular also play an important role in cultural and social affairs of these communities.

The health and well – being of livestock is therefore important to these communities. The necessity to develop and manufacture appropriate preventive and curative technologies and veterinary medicines at a realistic cost to improve the health and production of livestock in developing countries (Julian1990) has been recognized.

The pharmaceutical industry, veterinarians, Para-veterinary professionals, pharmacy and the drug regulatory authorities all play a role in delivery of veterinary medicinal products to farmers (Blum et al 1981; Swan, Sykes and Schlebusch 1994; Swan 1997). The pharmaceutical industry develops markets and distributes veterinary medicinal products whereas veterinarians must ensure the jurisdiction and safe use of these products through accurate

diagnosis and by providing advice on how these products should be handled and administered.

2.6 Veterinary drugs supply:

Animal population in Sudan increases annually with higher rates. This needs continuous supply of drugs to maintain treatment and control of prevalent diseases.

Sudan doesn't manufacture veterinary drugs and all drugs consumed are imported. El-shifa Factory was the only efforts which have been made recently in order to produce veterinary drugs in side Sudan. The factory started manufacturing in 1996 and after two years of production it was attacked by U.S missiles because it was incriminated for production of biological weapons (poisonous gas).

The public and private sector tend to avail the requirements by importing veterinary drugs from different companies with different nationalities all over the world.

The private sector has imported about 96% of the total imports in the last 10 years which indicates minimal contribution of the public sector.

The private sector importation of drugs has shifted from Western Europe companies due to their high costs as compared to the low cost of the Asian and Middle East companies. The most important countries of origin for these companies are India, Pakistan, Malaysia, Egypt, Syria, and Jordan. On other hand private sector importers use effective promotional methods such as providing pharmacies sales commissions up to 25%. Basic drugs and medicine preparation imported include the following groups of drugs antibiotics, anthelmentics, anti-blood parasites drugs, acaricides, poultry feed additives and others.

Before implementation of the free economy policies in mid nineties, importation policy was organized, executed and controlled by the Department of Veterinary supplies, Ministry of Animal Resources. During that period the annual budget allocations varied from six million US$ to eight million US$. The government contribution (general budget) was in the range of 40-60%, the balance was covered from foreign grants, aids and loans.

Quantities and specifications of drugs were determined, widely advertised in tenders for different bidders. Winners were only allowed to import these items and offered facilities. Private companies from their own resources could import drugs not included in tender books. The drugs and therapeutics were then sold to veterinary service in different parts of the country according to their actual needs.

The policy of the free economy didn't meet full success at first because the institutional and financial restrictions imposed on drugs trade were not fully lifted and hence the first three years (1996-1998) of this policy implementation could be described as a acquiescent period where the values were maintained within low levels. (3.9, 4.3 and 4.4mn$ in 1996, 1997 and 1998 respectively. In 1999, the value of imported drugs escalated to 17.7mn$. This very high and dramatic increase could be attributed to the severe competition between importing companies to fill the gap created by the disappearance of El-Shifa products from market and the great facilities offered by the government to import veterinary drugs immediately after the destruction of El-Shifa factory in 1998. The average value of annually imported drugs was estimated 35.5 mn$ table 2 (Saad et al 1999).

Table No. 2: The values of imported drugs in mn$ from 2004 -2008

Year	2004	2005	2006	2007	2008
Value	24.6	22.3	37.6	38	55

Source Ministry of Animal Resources and Fisheries 2008

2.6.1 Drug suppliers and distributors

Drug suppliers and distributors could be categorized into two main segments:

- The private sector segment.
- The public sector segment.

2.6.1.1The private sector segment;

This is the major and larger segment. Its contribution in importing drugs exceeded 95% of the drug trade and has the greater market share as an importer, supplier and distributor of drugs.

2.6.1.2The public sector segment;

This constitutes the governmental entities and premises that supply, distribute the veterinary medicines through the allocated annual budget.

2.7 Importing and distributing companies:

These companies register drugs at the National Council for Drugs and Poisons after fulfilling the requirements necessary for registration of drugs. The overwhelming majority of them serve as authorized dealers (local representative) of foreign companies. The companies import drugs and sell on whole to different public or private distributors.

2.7.1 Institutes involved in the supply of veterinary drugs are:

2.7.1.1 Veterinary Supplies Corporation this is a parastatal public sector institution is considered as the sole national importer and supplier till 1990ies when the privatization policy was adopted. Thereafter the

implementation of the liberalization policy, the share percent in imported drugs calculated between 2.5 and 5.4. (Table 3)

2.7.1.2 The veterinary services

Different states may sometimes receive loans or funds from Non Governmental Organizations NGOs, or international organizations for the supply of veterinary drugs.

Table 3: The share percent of Veterinary Supplies Corporation (VSC) in imported drugs during 1997-2002

Year	Imported drugs			% of V.S.C
	V.S.C	Vet. Companies	Total	
1997	106,472.00	4,189,862.18	4,296,334.10	2.5%
1998	200,732.00	417,367.23	4,374,403.23	4.6%
1999	543,627.40	17,138,916.90	17,682,544.30	3.1%
2000	567,263.00	11,729,949.00	12,206,212.00	4.7%
2001	486,112.00	16220455	16706567	2.9%
2002	556,322.00	9,697,488	10,253810	5.4%

Source Ministry of Animal Resources and Fisheries 2002

2.8 Distribution of drugs

The distribution of drugs is basically carried out by smaller companies, pharmacies, veterinary services centers and individuals.

2.8.1 Smaller companies:

The smaller companies serve as distributing agents between large companies and pharmacies and veterinary centers. They may act as retailers and sell directly to consumers.

2.8.2 Veterinary pharmacies:

Pharmacies are found mainly in Capitals of states and big cities. The actual number of pharmacies is difficult to get as no record is available in the central ministry. This is become after licenses issuance the whole process is transformed as a state affair but no state reports are sent regularly to Central Ministry. However, the number of licenses issued to pharmacies till the year 2001-2002 (when issuance of licenses was central) and their distributions in different states are depicted in table 4.

For very obvious logistical reasons, the number of pharmacies in remote rural areas is very low. In these areas the service of drug dispensing and provision is made by volunteers who belong to the big families of the nomads and accompany them during their movement. They take sufficient number of drug items in sacs. The volunteers serve as liaison agents of the farig (the place where the nomads settle for some days during their movement), inform them about places of vaccination camps, prices of animals etc.

Table No. 4: number and distribution of veterinary pharmacies in Sudan 2001-2002

State	Veterinary pharmacies
North Kordofan	18
South Kordofan	1
West Kordofan	1
North Darfour	21
South Darfour	13
West Darfour	2
EL Geddarif	4

Kassala	9
Red sea	1
Blue Nile	-
Sennar	12
ELGezira	18
White Nile	34
Northern	1
River Nile	
Khartoum	12
North upper Nile	-
Unity	-
Gongoli	-
N. Bahar Elgazal	-
W.Bahar Elgazal	-
Albohairat	-
Warab	-
Bahar Algabal	-
E.Equatoria	-
W. Equatoria	-
Total	147

Source Ministry of Animal Resources and Fisheries 2002

2.9 The veterinary services Centers

These centers include public veterinary hospitals, veterinary dispensaries and private veterinary clinics. They provide veterinary services in animal health, animal production in different states. Public veterinary hospitals are

usually located in the state capital and state big cities. Veterinary dispensaries are found in small towns and big villages. Number and distribution of public veterinary hospitals and dispensaries are shown in table 5.

Table No. 5: Number and distribution of veterinary hospitals in Sudan

State	Vet. Hospitals	Dispensaries
Northern	8	14
Southern	5	-
Eastern	10	23
Central	27	43
Western	36	62
Khartoum	8	6
Total	94	148

Source Ministry of Animal Resources and Fisheries 2002

2.10 The private clinics

These are owned and operated by a veterinarian and are usually located near livestock markets in the Capital city and big towns. It should be mentioned that veterinary clinics are concentrated in Khartoum, White Nile, Gezira, North and South Darfur (table 6).

Table No. 6: Number and distribution of licensed private veterinary clinics in Sudan (2003)

State	Veterinary Clinics
North Kordofan	23
South Kordofan	5
North Darfur	28
South Darfur	21
West Darfur	-
El Geddarif	4
Kassala	9
Red sea	6
Blue Nile	-
Sennar	14
ELGezira	21
White Nile	36
Northern	-
River Nile	2
Khartoum	38
North upper Nile	3
Unity	1
Gonoli	-
N.Bahar Elgazal	1
W.Bahar Elgazal	-
Albohairat	-

Source Ministry of Animal Resources and Fisheries 2003

2.11 Paravets:

Holden et al (1996) suggested that paravets are one of the most promising avenues for increasing the provision of animal health services in rural areas of many developing countries. In general, limited enthusiasm was indicated for their involvement in service delivery and with only weak support for their involvement in disease investigation and promotion of safe domestic trade in Asia, and public health and disease surveillance in Africa. Paravets receive weak support for involvement in a range of tasks, but there is a division of opinion as to whether they should provide therapeutic veterinary services.

CHAPTER.3.

SURVEY METHODOLOGY

3.1 The study areas and data collection;

Refer to questionnaires in appendix.

The study area covered the following states of Sudan; 63 pharmacy questionnaires form (PhQF) Khartoum, 7 PhQF El Gezira, 3 PhQF Blue Nile, 17 PhQF White Nile, 45 PhQF Northern and Southern Kordofan, 16 PhQF Northern, Western and Southern Darfur, 8 PhQF Geddarif, 4 PhQF Kassala , 3 PhQF Sennar, 1 PhQF Red sea, 4 PhQF Northern and River Nile. The study addressed the issues of the private functioning veterinary pharmacies and clinics in the year 2009. An assurance to the private veterinary pharmacies and clinics staff was given regarding the confidentiality of data obtained, and that will be used for the sake of the study only. Data were collected over 6 months period between March and October 2009. The questionnaires were filled by veterinarians' desires.

The questionnaires were done by direct meeting. The information were collected thro**u**gh two questionnaires one for pharmacies and the other for clinics. Each questionnaire consisted of three sections that contained more than 30 questions. Feedback for most questions was measured by a check list, and close ended questions.

The first section was made in a way to determine the demographic data pertaining to veterinarians (including name, sex, education, qualifications and experience) and pharmacy & clinic premises (including date of establishment, location, type, working hours, the best selling months, percent of drugs sold by paravets and the ownership of the pharmacies).

The second section was designed to collect data on variables such as the size of daily sales, percentage of medications sold with prescription and without prescription. The respondents were also questioned about the pharmacy sales and whether they are appropriate to the location, whether they are satisfied with their current sales and whether the medicines available in their pharmacies are enough and cover all consumers' needs, the number of prescriptions dispensed per day, can they be able to limit the stock of medicines per year and deficit.

The third section of the questionnaire was developed to drugs supply and control method, the ways the respondents follow in ordering and buying, availability of warehouse for stocking medicines, the sources from which they buy their medications and goods, the budget allocated for buying medicines and goods. The respondents were also asked to estimate the inventory turn-over rates for medicines and goods, when they initiate new order for medications and goods and if they stored medicines beyond their pharmacies needs and the value of daily sales.

On the other hand, the form of clinics questionnaire consisted of three sections. The study covered following states 26 Clinic Form Questionnaire (CFQ) Khartoum, 4 CFQ ELGezira, 3 CFQ South Kordofan, 2 CFQ Blue Nile, 2 CFQ Kassala, 2 CFQ Darfur states and 1 CFQ North Kordofan.

The first section was intended to determine the demographic data pertaining to clinic officers (including sex, education and knowledge about clinics and total years of experience) and clinics premises (including location, daily working hours.

The second section of clinic questionnaire included gathered data on variables such as the size of daily sales. The respondents were also questioned about the following issues: (1) Do they prefer mobile clinic or fix

clinic? (2) number of cases per day (3) the most treated cases in the clinic (4) and the most cases treated outside the clinic (5) the most drugs consumed in the clinic (6) is it annexed with storehouse (7) can they be able to limit the stock of medicines and goods per year and deficit?.

The third section was addressed to cooperation between veterinarian in the clinic and authorities in disease monitoring, prevention and control.

3.6 Data analysis

The questionnaires were manually checked for accuracy of the data, and then analyzed using the statistical Analysis System (SAS)

CHAPTER.4.

THE RESULTS

The private veterinary pharmacies

Sample characteristics respondents:

Biodata

Geographical distribution:

As shown in table 7 the bulk of veterinary pharmacies were located in Khartoum state, the number was calculated as 63 representing 36.8%. This was followed by North Kordofan 37 (21.6%), White Nile was 17 (9.9%). Number of pharmacies in other states varied between 1 and 8. The percentage of pharmacies in South Darfur, South Kordofan, ElGeddarif and ElGezira states have exceeded 4% each while the percentage of pharmacies in the other states varied between 1 and 2.9%.

Table No. 7: Geographical distribution of veterinary pharmacies in Sudan states

The state	Veterinary pharmacies	(%)
Khartoum	63	36.8
North Kordofan	37	21.6
White Nile	17	9.9
South Darfur	8	4.7
South Kordofan	8	4.7
El Geddarif	8	4.7
El Gezira	7	4.1
Western Darfur	5	2.9
Kassala	4	2.3
Blue Nile	3	1.8
Northern Darfur	3	1.8
Sennar	3	1.8
River Nile	2	1.2

Northern	2	1.2
Portsudan	1	0.6
Total	171	100

Demographic data of veterinarians

The demographic survey results as depicted in table 8 revealed that 108 (63.2%) of respondents are males and 63 (36.8%) are females. All respondents hold bachelor in veterinary medicine and 6 (3.5%) of them have master of veterinary medicine or sciences. They were graduated in the faculties of veterinary medicine or sciences; University of Khartoum92 (53.8%), 23 (13.5%) University of Sudan, 42 (24.6%) University of Nyala, 5 (2.9%) University of Bahar Elgazal and 9 (5.2%) from foreign universities .Out of the total 24 (14%) of them have acquired pharmacy management and inventory control experience skills during their work in pharmaceutical companies as sales agents or promoters.

Table No. 8: Shows demographic data of veterinarians

Variables	N	(%)
Gender		
Male	108	63.2
Female	63	36.8
Qualification		
Bachelor of Vet Sc or Med	171	100
Master degree holders	6	3.7
University of graduation		
U.OF.K	92	53.8
Sudan	23	13.5
Nyala	42	24.6
Bahar ELGazal	5	2.9
Foreign universities	9	5.2
Total years of experiences		
Less than 5 years	87	50.9
(5-10) years	33	19.3
More than 10 years	51	29.8
Pharmacy administration course		
Yes	24	14
No	147	86
Inventory control and purchasing course		
Yes	33	19.3
No	138	80.7

Premises:-

This is clearly shown in table 9. Among 171 veterinary pharmacies 165 (96.5%) were independent pharmacies. The majority 141 (82.6%) of these pharmacies were owned by veterinarians. 84 pharmacies (49.1%) have warehouse for storing medications and inventory goods. 144 (84.2%) were located near farms areas. The pharmacy age varies between 1-34 years with a mean calculated as 16.36 ± 16.85 years.

Table No. 9: Premises demographic data

Variables	No	(%)
Pharmacy location		
Near farms areas	144	84.2
Medium	27	15.8
Daily work hours in the pharmacy		
Less than 8		
More than 8 hrs (8-12)	95	55.6
	76	44.4
Pharmacy description		
Independent pharmacy	165	96.5
Chain pharmacy	6	3.5
Pharmacy ownership		
Veterinarian	141	82.6
Non-veterinarian	30	17.4
The pharmacy age		
Less than 2 years	44	25.7
(2-5) years	56	32.8
More than 5 years	71	41.5
Warehouse for storing medications and goods		
Yes	84	49.1
No	87	50.9

Table 10 shows that medications sold with prescription accounted for 16% ± 2.9% of the total sales. In addition, the mean value of daily sales was 383.7 ± 371.7 SDG. The range of the daily sales was very wide which extended from 10 to 1500 SDG.

Table No. 10: Shows the mean ± SD and range of items related to pharmacy sales

Variable	Response	Mean + SD	Range
Percentage of medications sold with	150	16 ± 2.9	5% - 30%

prescriptions			
Percentage of medications sold over counter	150	72.3 ± 4.3	30% - 100%
Number of prescriptions not dispensed due to unavailable medications	86	4.2 ± 1.5	1 – 10
Value of daily sales	120	383.7 ± 371.7	(10-1500) SDG

Sales and stocks

Table 11 shows that 114 (66.7%) of respondents reported that the pharmacies sales were appropriate to their location and 128 (74.9%) of them showed satisfaction with the current sales size and 130 (76%) of respondents thought that items available in the pharmacy were enough to cover all the consumer needs. The percentages of drugs sold by paravets varied between 9.9% and 31% and the best selling season was autumn.

Table No. 11: Sales and stocks

Variables	N	(%)
The pharmacy sales are appropriate to its location		
Yes	114	66.7
No	57	33.3
satisfaction with the current sales size		
Yes	128	74.9
No	43	25.1
Percentage of drugs sold by paravets		
Less than 10%	42	24.6
(10-30)%	31	18.1
(30-50)%	28	16.4
(50-70 and more)%	17	9.9
None	53	31
The best selling season in the year		
Autumn	91	53
Winter	23	13.4
Summer	12	7
A+W	28	12.3
A+S	9	5.2
Respondents were not sure	16	9.3
The time needed for drugs consumption		
Less than 3 months	82	48
(4-6) months	42	24.6
More than 6 months	43	27.4
The value of daily drugs sold in SDG		
50-100	38	22.2
100-300	49	28.7

300-500	22	12.9
500 - 1500	12	7
Respondents were not sure	50	29.2
Items available in the pharmacy are enough to cover all consumers need		
Yes	130	76
No	41	24

Purchasing and inventory turnover rates:

The majority of respondents 147 (86%) got the medications through a group purchasing arrangement to reduce cost (Table 12). A number of 47 (27.5%) of respondents stored quantities of medications that cover 1 month-period, whereas, 83 (48.5%) of respondents stored medications that cover 3 to 4 months, and 21 (12.3%) stored medications that cover 5 to 8 months and 16 (9.4%) stored medications that cover 9 to 12 months. 86 (50.3%) of the respondents have limited budget to buy their medications and goods, whereas, 85 (49.7%) of the respondents had an open budget and used it as needed (Table 12).

The results showed that a small percentage of surveyed veterinary pharmacies 15 (8.8%) always stored additional quantities of medications more than the pharmacy needs (Table 12).

Table No. 12: Purchasing and inventory turnover rates

Variables	**N**	**(%)**
Do you buy your medicines through purchasing group?		
Yes	147	86
No	24	14
Why group purchasing?		
Reduce cost	126	73.7
Save time	45	26.3
Are you ordering your medicines by yourself?		
Yes	164	95.9
No	7	4.1

Are you satisfied with methods of buying medicines?		
Yes	128	74.9
No	43	25.1
From where you buy your medicines?		
Directly from companies	166	97.1
Directly from wholesalers (subagents)	5	2.9
Quantities of stored medications always cover		
One month	47	27.5
(3-4) months	83	48.5
(5-8)months	21	12.3
(9-12) months	16	9.4
Do you have a determined budget for medications and goods to be bought?		
Yes	86	50.3
No	85	49.7
Are you storing additional quantities of medications more than the pharmacy needs		
Yes	5	2.9
No	166	97.1

THE PRIVATE VETERINARY CLINICS

Sample characteristics respondents:

The number of distributed questionnaires was 40; which covered the functional and operating clinics available to the reach of the author.

Geographical distribution

As shown in table 13 the bulk of veterinary clinics were concentrated in Khartoum state calculated as 26 representing 65% seconded by EL Gezira 4 (10%). The number of clinics in other states varied between 1 and 3.

Table No. 13: Geographical distribution of veterinary clinics in Sudan states

The state	Veterinary clinics	(%)
Khartoum	26	65
El Gezira	4	10
South Kordofan	3	7.5
Blue Nile	2	5
Kassala	2	5
South Darfur	1	2.5
North Kordofan	1	2.5
Western Darfur	1	2.5
Sennar	0	0
El Geddarif	0	0
Northern Darfur	0	0
White Nile	0	0
River Nile	0	0
Red sea	0	0
Northern	0	0
Total	40	

Veterinarians' demographic data

As depicted in table 14 the demographic survey revealed that 22 (55%) out of the 40 respondents involved in this business are males and 18 (45%) are

females. The qualification was 36 (90%) have bachelor degree only and 4 (10%) hold master degree. All clinics are owned and run by veterinarians most of them are U.OF.K graduates 24 (60%), while 7 (17.5%) University of Sudan, 5 (12.5%) Bahar ELGazal University, 2 (5%) from foreign university and 2 (5%) from Nyala university (Table 14).

The total years of experience varied: 17 have less than 5 years, 13 between 5-10 years and 8 have more than 10 years. The numbers of cases per day in 17 (42.5%) clinics were less than 5 cases per day, 11 (27.5%) clinics between 5 to 10 cases, 6 (15%) clinics more than 10 cases.

Table No. 14: Veterinarians' demographic data

Variables	**n**	**(%)**
Gender		
Male	22	56.1
Female	18	43.9
Qualification		
Bachelor degree only	36	90
Master degree	4	10
University of graduation		
U.OF.K	24	60
Sudan	7	17.5
Nyala	2	5
Bahar ELGazal	5	12.5
Foreign universities	2	5
The numbers of cases per day		
less than 5 cases	17	42.5

between 5 to 10 cases	11	27.5
more than 10 cases	6	15
Total years of experience		
Less than 5 years	18	45
(5-10) years	14	35
More than 10 years	8	20

Premises:

Table 15 shows the demographic data characteristics pertaining to premises. All veterinary clinics were located near farms and 15 (37.5%) have warehouse to store their medications, while 25 (62.5%) keep their medications in the clinic. Also 14 (35%) prefer mobile clinic to deliver the veterinary services and 23 (57.5%) prefer constant established clinic and 3 (7.5%) said both. The role of veterinarians in their clinics in diseases surveys and control was moderate. There were 14 (35%) out of 40 who participate in epidemic programs by sending report to veterinary authorities.

Table No.15: Premises demographic data

Variables	**n**	**(%)**
Clinic location		
Near farms	40	100
Far	0	
Daily working hours		
Less than 8 hours	13	32.5
More than 8 hours	27	67.5

Warehouse for storing medications		
Yes	15	37.5
No	25	62.5
Participating in epidemic scope programs		
Yes	14	35
No	26	75
Do you prefer established or mobile clinic or both?		
Mobile	14	35
established	23	57.5
Both	3	7.5

The mean age of the clinic was (4.7±1.2), 10 clinics were less than 2 years old, 15 between 2-5 years and 15 more than 5 years (Table 16). The mean daily sales was (207.4 ± 184.1) SDG. 27 veterinarians work for more than 8 hours and 13 less than that.

Table No. 16: The mean ± SD and range of items related to clinic sales

Variables	**Response**	**Mean +SD**	**Range**
Clinic age (years)	38(95%)	4.7 ±1.2	2 – 5
Value of daily sales	39(97.5%)	207.4 ± 184.1	30 - 1000

Sales and stocks:

Table 17 shows the best season for clinics revenue was autumn 47.5% (19) and winter 37.5% (15) and no specific season was 6 (15%).

Table No. 17: Sales and stocks

Variables	n	(%)
The best selling season for the clinic		
Autumn	19	47.5
Winter	15	37.5
Summer	0	0
No best season	6	15
The quantities of medications sold per annum and the deficit		
Yes	4	10
No	36	90

The types of most important veterinary drugs:

As shown in table 18, the results revealed that antibiotics constituted 70% of pharmacy sales, anthelmintics was 20% antiprotozoal 5% and other drugs were 5% as shown in table 18.

- **Antibiotics**:

This included (Oxytetracycline 5%, enrofloxacine penicillins, streptomycin, tylosin 20% they were the best selling drugs).

- **Antihelimintics** (which included albendazole group drench, tetramizole 10% powder, ivermectin nitroxynil, oxyclozanide, refoxanide, dichlorophen, niclosamide, arecoline hydrobromide, praziquantel,.)
- **Antiprotozoal** (which included diminazine aceturate berenil diminazine diaceturate, quinuronium sulphate, imidocarb proprionate imizol, amprolium puparvaquone.)
- **Antitrypanosomal** drugs (which included quinapyrimine antrycide, suramin, berenil, homiduim bromide.)

- **Antidiarrhoea**
- **Additives;** which included vitamins + minerals (vitamin B complex + vitamin A and licking stone.
- **Anti-inflammatory drugs** (which included dexamethazone, phenylbutazone).

Table No. 18: The types of the most veterinary drugs sold in the clinics

The drug type	**%**
Antibiotics	70
Anthelmintics	20
Antiprotozoal	5
Other drugs	5

The most drugs sold in different seasons:-

Winter:

Antibiotics, anti-inflammatory drugs and insecticides.

Wet summer (autumn):

Anti-trypanosomal drugs, anti-helminthes drugs, anti-diarrhea, antibiotics and anti-protozoa.

Dry summer:

Insecticides, vitamins, minerals and antibiotics.

DISCUSSION AND CONCLUSION

It is globally recognized that, the role of private veterinary pharmacies and clinics in development of veterinary services is progressively increasing due to the privatization policy that was adopted in the middle years of nineteen nineties.

The present study has been conducted in Sudan and was intended to examine private veterinary pharmacies and clinics with emphasis on the number of veterinarians working in this sector, the role gender, experiences and qualifications in inventory control, purchasing, selling of drugs, and their participation in health control programs.

The questionnaire developed, received very good response from veterinarians, and despite the coverage is not so wide. This could be attributed to relatively short time required to complete the questionnaire by the author himself direct contact and monitoring.

The results revealed that 108 (63.2%) of the respondents are males and 63 (36.8%) are females. All of them graduated in faculties of Veterinary Medicine and Veterinary Sciences. Only 6 (3.5%) of the respondents hold master degree. The Universities of graduation were Khartoum 92 (53.8%), Sudan 23 (13.5%), Nyala 42 (24.6%), Bahar ELgazal 5 (2.9%) and Foreign Universities 9 (5.2%).

Respondents who have experience in pharmacy administration , purchasing and inventory control were previously working as sales agents and/or promoters in drug companies constituted 24 (14%) and proved to have good purchasing experience as judged by the high turnover rate of their pharmacies and their knowledge on how much they purchase and at what time of the year. On the other hand the majority of respondents have poor

knowledge on inventory control. The reason behind that most of veterinarians who were enrolled in the private business have not received any training in private business management.

In turn, this may indicate that items remained unsold on their stocks for a long period (more than 3 to 4 months) which may be considered entirely as long period of time to have money tied up unproductively. Calculating the turnover rate is one of the important factors in management of pharmacies inventory because it re-allocate capital for other profit, making ventures and increases return on investment in inventory.

On the other hand the study revealed that these services were concentrated in Khartoum, North Kordofan, White Nile, South Kordofan, ELGeddarif and Gezira states indicating that these states are witnessing investment schemes in dairy, poultry and fattening. The study showed that about 41 (24%) of respondents indicated that their pharmacies do not stock enough items to cover all the consumer needs. This finding may reflect a poor management of these pharmacies and high lighted poor consumer services. The lack of basic veterinary infrastructure and production potential at justify the concentration of most private activities in urban areas particularly Khartoum.

Although, such high rate of inventory turnover is certainly one of the important objectives of inventory management, it is not the only important objective. Therefore, to reach an effective inventory control, it should be combined with high quality professional services and large gross margin. Furthermore, this is an indication that veterinary medicine colleges should emphasizes more on veterinary pharmacy subjects such as pharmacy management and inventory control in their curricula to increase the knowledge of veterinarians in this field of practice. And for those

veterinarians who are already in this field of business, a pharmacy management and inventory and purchasing courses might be required as a one of the requirements for re-licensure.

Regarding the location of the pharmacy and its effect on the sales, 57 (33.3%) of veterinarians indicated that sales of their pharmacies were not appropriate to the location. Such findings could be due to several factors including, heavy competition, poor management and poor consumer loyalty. The results indicated that 52 (30.4%) of veterinarians do not keep records of their sold items which emphasizes the poor financial management. Knowledge of sold items is crucial for maintaining proper inventory and estimation of pharmacy budget. Purchasing groups are experienced by 147 (86%) of pharmacies, whereas the minority buy their needs by themselves. Those who choose purchasing group considered it for money (marginal profit) and saving time. Additionally, group purchasing use may provide chance for sharing information through collection and dissemination of information. Furthermore, group purchasing can cause labor saving through reduced time devoted to administration matters. Group purchasing can also help to enhance purchasing operation by providing counseling services as well as providing assistant and expertise to the members in managing pharmaceutical inventories.

The primary goal of veterinary pharmacies is to supply the livestock owners with their needs of medicine. This goal may not be achieved if a good percentage of pharmacies profit obtained from sales of non-medicine items. Fortunately all pharmacies get their profit from medicinal items. Surprisingly it was noticed that about 15 (8.8%) of respondents stock more items in their pharmacies than their needs. This may be due to the purchasing of large quantities of drugs by those pharmacies in remote

nomadic and high livestock population areas in the dry season and before raining. This may lead to the risk that the drugs are not sold.

Among the many problems facing private pharmacies today, is challenge of maintaining the appropriate inventory investment and providing superior pharmaceutical services. Insufficient use of budget in inventory can lead to many problems in private veterinary pharmacies. The overstock of unwanted or unsold medicines in pharmacies is not only an economic burden, but also can tie up a capital that can be used to buy high demanded items.

An exploratory, qualitative, descriptive case study was conducted to gain an understanding of functioning private veterinary clinics in Sudan states (except those areas suffering from conflicts). The study showed that the functioning private veterinary clinics were so poor when compared with ideal veterinary clinics because they are poor in laboratory equipment, approximately 36 (90%) of them have no laboratories for proper disease diagnosis. The number of cases in clinic varied between 5 - 10 per day. The mostly repeated cases in the clinics were inflammation 16 (40%) pneumonia9 (22.5%) wounds 8 (10%) reproductive cases 4 (5%) and external parasites 2 (2.5%). In addition, most consumed drugs were antibiotics 28 (70%) which indicates that the clinician uses umbrella treatment as he depends upon tentative diagnosis.

The study shows that 36 (90%) of respondents participate in epidemic scope programs and have co-ordination with veterinary authorities in diseases investigation programs.

I agree with CTA and de Haan and Nissen the impact budget reduction and broad service delivery responsibilities left many state veterinary services with insufficient operating budget to fulfill their obligations and hence encouraged the view that they had become ineffective and inefficient.

APPENDIX

U.OF.K
Faculty of Veterinary Medicine

Pharmacy Questionnaire Form

Name……
Sex male ( ) female ( )

Education level bachelor ( ) postgraduate ( )
Vet ( ) Pharmacist ( ) none ( )
University……..

Pharmacy name……

Location……

State……
Locality……

The city……

The age of pharmacy
Less than 2 years ( ) between (2-5) ( )
More than 5 ( )
Experience years in this field……...

Pharmacy administration courses
Yes ( ) No ( )
Inventory control and purchasing courses
Yes ( ) No ( )
The working hours per day
Less than 8 hours More than 8 hours
Volume (percentage) of drugs sold by paravets……

Pharmacy description
Independent ( ) Belong to company ( )

Pharmacy ownership vet ( ) none vet ( )

Drugs warehouse yes ( ) no ( )

The time need for drugs consumption the turn over rate ...……

The value of daily drugs sold (SDG)…….…….

Percentage of drugs sold with prescription…….…….

Percentage of drugs sold without prescription…….……...

Number of prescription that was not dispensed due to unavailable drug……..

Do you keep records for drugs sold?

Yes ( ). No ( )

Sales appropriate to location

Yes ( ). No ( )

Items available in the pharmacy are enough to cover all consumers need

Yes ( ). No ( )

Can you have ability to check the quantities of drugs sold per annum and the deficit?

Yes ( ). No ( )

The volume of drugs sold per annum?.....

Drugs request by……..……..

Quantities of drugs always cover

1month ( ) (3-4) months ( )

(5-8) months ( ) (9-12) months ( )

Storage of drugs more than pharmacy needs

Yes ( ). No ( )

Buying medications through purchasing group?

Yes ( ). No ( )

And why?

For marginal profit ( )

For guarantee ( )

Requesting of medications and goods by your self

Yes ( ). No ( )

Satisfaction of your methods in buying medicines and goods.

Yes ( ). No ( )

Medicines supply ways

Companies ( ). Big veterinary centers ( )

Storage of medicines and goods always covered the needs?

Yes ( ). No ( )

Budget for purchasing medicines and goods

Yes ( ). No ( )

U.OF.K
Faculty of Veterinary Medicine

Clinic Questionnaire Form

Name
……
Sex
Male ( ) Female ( )
Education level Bachelor ( ) Postgraduate ( )
Vet ( ) Pharmacist ( )
University
……
Clinic name
…….
Location
……..
State
……...
Locality ……...……...
The city……..……

Clinic age
Less than 2 years ( ) between 2-5 ( ) More than 5 years ( )

Experience years ……..

The best selling season in year…….

Drugs warehouse
Yes ( ) No ( )
Quantities of drugs always cover
Month ( ) 3-4 months ( ) 5-8 months ( ) 9-12 months ( )
The drugs availability situation well or cover from others
Yes ( ) sometimes ( ) No ( )
The number of cases per day
Less than 5 ( ) 5-10 cases ( ) more than 10 ( ) Opened ( )
The most repeated cases in the clinic……...

The most out cases in the clinic……...

Mobile clinic (for out cases)

Yes ( ) No ( )

The most consumed drugs in the clinic……

The working hours per day

Less than 8 hours ( ) More than 8 hours ( )

The sales value per day ……...

The most drugs sold in the clinic ……...

Records of sold drugs

Yes ( ) No ( )

Can you have ability to check the quantities of drugs sold per annum and deficit?

Yes ( ) No ( )

Are there any cheating drugs in the markets?

Yes ( ) No ( )

Describe percentage of it

High ( ) moderate ( ) scarce ( )

The most consumed drugs in the clinic……

Are there any co-ordination with ministry of animal resources & fisheries in animal health and diseases control?

Yes ( ) No ( )

If yes describe it.....

Prefer mobile established clinic or mobile clinic?

Mobile ( ) Established ( ) Both ( )

Participating in epidemic scope programs?

Yes ( ) No ( )

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